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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jizheng Xu

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EXAMINER

WERNER, DAVID N

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/736,955	Applicant(s) XU ET AL.	
	Examiner David N. Werner	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action for US Patent Application 10/736,955 is responsive to communications filed 23 April 2008, in reply to the Non-Final Rejection of 23 November 2007. Currently, claims 1-36 are pending.

2. In the previous Office action, claims 1, 2, 4-11, 13-20, 22-29, and 31-36 were rejected under 35 U.S.C. 103(a) as obvious over "An End to End Software Only Scalable Video Delivery System" (Chaddha et al.), in view of US Patent 5,687,095 A (Haskell et al.). Claims 3, 12, 21, and 30 were rejected under 35 U.S.C. 103(a) as obvious over Chaddha et al. in view of Haskell et al., and further in view of "A Framework for Efficient Progressive Fine Granularity Scalable Video Coding" (Wu et al.). In an interview with Applicant's Representative on 9 April 2008, the relevance of US Patent 6,407,680 B1 (Lai et al.) to the present invention was discussed.

Response to Arguments

3. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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Claims 10-18 and 28-36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 28 encompasses a "tangible computer-readable medium". However, it is noted that in the practice of law, including US patent law, many terms are given specific, precise meaning that do not necessarily overlap their common definitions. Particularly, the term "tangible" is tied to the context of a "useful, concrete, and tangible result". See *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, F.3d 1368, 1373-74 47 USPQ2d 1596, 1601-02 (Fed. Cir. 1998). The "tangible" requirement does not necessarily mean that a claim must be tied to a particular machine or apparatus or must operate to change articles to a different state or thing. Instead, the word "tangible" in the special context of patent law indicates a non-abstract, real-world result. See MPEP §2106 (IV)(C)(2)(2)(b). In the present application, the recognized tangible result is the transcoding of the enhancement layer bitstream. Therefore, the addition of the word "tangible" to the claim does not change the scope of the invention as excluding certain non-statutory embodiments that do not fall within the four statutory categories of invention under 35 U.S.C. 101.

The relevant portions of the USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (Official Gazette Notice of 22 November 2005), Annex IV, read as follows:

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 2583-84, 32 USPQ2d at 1035.

Claims that recited nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, *per se*, and as such are nonstatutory natural phenomena. See *O'Reilly*, 56 U.S. (15 How.) at 112-114. Moreover, it does not appear that a claim reciting a signal encoded with functional

descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.

...a signal does not fall within one of the four statutory classes of Sec. 101.

...signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101.

Claims 10-18 are drawn to a "computer-readable medium" and 28-36 are drawn to a "tangible computer-readable medium" encoding functional descriptive material. Normally, the claims would be statutory. However, the specification, at amended paragraph 0042, defines the claimed computer-readable medium as encompassing statutory material such as "memory", as well as *non-statutory* subject matter such as "communication media". It is noted that the word "tangible" has acquired the special legal definition as producing a real-world, non-abstract result, rather than the ordinary definition as capable of being perceived by the sense of touch, so the word "tangible" in the claim does not tie the computer-readable medium to a particular machine or apparatus described in the specification. See MPEP §2106 (IV)(C)(2)(2)(b). In contrast, claim 19 is a "computer device" in which instructions are encoded on a physical "memory".

A signal embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the statutory classes of §101. Rather, a "signal" is a form of energy, in the absence of any physical structure or tangible material. See *In re Nuijten*, 84 USPQ2d 1495 (Fed. Cir. 2007, *en banc* denied 2008, *writ of cert. pending*). Because the full scope of the claims as

properly read in light of the disclosure encompasses non-statutory subject matter, the claims as a whole are non-statutory.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7-14, 16-23, 25-32, and 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent Application Publication 2003/0002579 A1 (Radha et al.). Radha et al. teaches a system for transmitting video over a variable-bandwidth network, in which the video, comprising a base layer and enhancement residual layers, may change coding according to available bandwidth. Regarding independent claim 1, in Radha et al., video is originally coded at a bit rate R_{BL} (paragraph 0039), usually a minimum bitrate R_{MIN} of a variable-bandwidth output network (paragraph 0040). A series of residual images are then generated based on the original video and the coded base layer video (paragraph 0042) and encoded in a fine-granular scalability technique (paragraph 0047). As a result, a bitstream containing a base layer BL and one or more enhancement layers EL are generated (paragraph 0041). At transmission, during step S705, a controller receives bit rates R_{BL} , R_{MAX} , and R , and selects one or more

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enhancement layers, with the base layer, to have a bandwidth near the difference between the actual bandwidth of an output network and the bandwidth of the base layer (paragraph 0051). This corresponds with the claimed steps of decoding an enhancement layer bitstream and calculating a new bit rate based on a difference between the data throughput characteristics of the network and a base layer bit rate. The bit rates, including current R_{MAX} , are produced by calculation block 48 (paragraphs 0047-0049). This corresponds with the claimed step of determining data throughput characteristics of a network. At step S706, the base layer and selected enhancement FGS images are output as a BL stream and new EL stream (paragraph 0052). This corresponds with the claimed step of encoding an enhancement layer bitstream.

Regarding independent claims 10, 19, and 28, Radha et al. operates on a personal computer (paragraphs 0032–0035).

Regarding claims 2, 11, 20, and 29, in Radha, the chosen residual layers selected for transmission with the base layer are the ones "most appropriate for the available bandwidth" (paragraph 0012).

Regarding claims 3, 12, 21, and 30, in Radha et al., residual images are encoded using fine-granularity scalability coding (paragraphs 0007-0010, 0047).

Regarding claims 4, 13, 22, and 31, when a receiver bandwidth decreases, Radha et al. selects a set of residual images successively having lower bit rates, and regarding claims 5, 14, 23, and 32, when a receiver bandwidth increases, Radha et al. selects a set of residual images successively having higher bit rates (paragraph 0014).

Regarding claims 7, 16, 25, and 34, Radha et al. streams the EL and BL bitstream to a decoder 57 through the network (paragraphs 0052-0053).

Regarding claims 8, 17, 26, and 35, the BL and EL streams generated in step S706 of Radha et al. correspond to the claimed encoded video data.

Regarding claims 9, 18, 27, and 36, Radha determines a maximum bit rate depending on if "the receiving device has sufficient processing power to handle those additional frames" produced at the higher bit rate (paragraph 0005).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6, 15, 24, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Radha et al. in view of US Patent 5,742,343 A (Haskell et al.) Claims 6, 15, 24, and 33 of the present invention teach encoding enhancement layers from motion vectors derived from a base layer. In contrast, Radha et al. creates enhancement layers by filtering a base layer (paragraphs 0043-0046).

Haskell et al. teaches a scalable video encoder and decoder. Regarding claims 6, 15, 24, and 33, in Haskell et al., the embodiment in figure 20, showing an encoder having a base encoder and an enhancement encoder, is exemplary. In the enhancement encoder, motion estimator 640 compares an enhancement layer frame

and with a base layer prediction frame, and uses the base layer pels and motion vectors to output enhancement layer motion vectors to motion compensator 655, to perform motion compensation with a previous enhancement frame (column 12: lines 9-31). By placing this motion compensation system in enhancement layer coder 54 of Radha et al., the present invention is achieved.

Radha et al. discloses the present invention except for using base-layer motion vectors to encode an enhancement layer in a video coder. Haskell et al. teaches that it was known to perform motion compensation in an enhancement coder from base level motion vectors. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the enhancement layer motion compensation system of Haskell et al. to the scalable coder of Radha et al., since the examiner takes Official Notice it was well-known in the art at the time the invention was made that the ability to present residual enhancement layer frames as predictive frames, as made possible by Haskell et al., rather than as mere intra frames, as confined by Radha et al., would significantly reduce the bandwidth needed to encode the residual enhancement layer frames, achieving either higher quality video for a given current bandwidth $R_{MAX} - R_{BL}$ or the same quality video at a lower available bandwidth.

Conclusion

8. This action is non-final due to the re-insertion of the Section 101 rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571)272-9662. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. N. W./
Examiner, Art Unit 2621

/Mehrdad Dastouri/
Supervisory Patent Examiner, Art Unit 2621